

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

IN REPLY REFER TO:

November 1, 1976

Mr. W.H. Pennington
U.S. Energy Research and Development
Administration
Washington, D.C. 20545

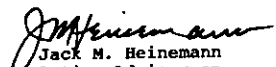
Dear Mr. Pennington,

I am replying to your request for comments on the Draft Environmental Impact Statement for Waste Management Operations, Savannah River Plant, Aiken, S. Carolina.

Our review concentrated basically on those areas of the electric power and natural gas industries for which the Federal Power Commission has jurisdiction by law, or where the staff has special expertise in evaluating environmental impacts involved with the proposed action. It does not appear that there would be any significant impacts in our areas of concern nor serious conflicts with Federal Power Commission responsibilities should this action be undertaken.

Thank you for the opportunity to review this statement.

Sincerely,


Jack M. Heinemann
Acting Advisor on
Environmental Quality

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

240 Stoneridge Drive, Columbia, South Carolina 29210

December 6, 1976

Mr. W. H. Pennington, Director
Office of NEPA Coordination
United States Energy Research and
Development Administration
Washington, D. C. 20545

Dear Mr. Pennington:

We have reviewed the ERDA Draft Environmental Statement for Waste Management Operations, Savannah River Plant, Aiken, South Carolina.

Our areas of interest include those sections pertaining to land use, soils, erosion, and sedimentation. Our comments will be limited to these areas. We recognize that many measures to control pollution have been taken.

We note the monitoring of the sediments in the adjacent Savannah River Swamp indicates that these sediments contain radioactive material. Therefore, reduction of sediment and soil movement from the plant area should be of prime concern. Assuming that the radioactive materials are being attached to soil particles and carried off as sediment, the control of erosion and sediment should be planned for to reduce further contamination of the swamp area.

The identification of the source of soil contamination is of paramount importance. If point sources can be identified, then the erosion from these point sources should be controlled by appropriate erosion control measures. If the pollution source is area-wide, then possibly the construction of major sediment basins or major structures to provide storage areas for sediment within the site boundaries would appear to be desirable.

Use of vegetation to control erosion and soil movement is a proven means to effectively control erosion and keep the soil in place. Stabilization of eroding areas will reduce the volume of sediment being moved into the swamp. This can be accomplished by immediately establishing vegetation after areas have been disturbed and on sites identified as sediment source areas.

K-36



U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

W. H. Pennington

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W. F. BEBBINGTON
808 WHITNEY DRIVE
AIKEN, SOUTH CAROLINA 29801

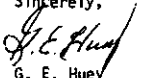
December 31, 1976

Reference is made to the second paragraph on Page J-4 which indicates that the contaminated sediment is relatively immobile and is expected to remain immobile. We do not agree with this statement since with the next major storm, sediments could be transported downstream. Every effort should be made to eliminate further contamination of the swamp.

We trust these comments will be helpful in the efforts being made to control pollution and in preparation of the final environmental impact statement.

The Aiken Soil and Water Conservation District, with technical assistance from the Soil Conservation Service, is available to assist in developing erosion and sedimentation control plans for the Savannah River Plant.

Sincerely,


G. E. Huey
State Conservationist

cc: R. M. Davis, Administrator
Soil Conservation Service
Washington, D. C. 20250

Council on Environmental Quality
Attention: General Counsel
722 Jackson Place, N.W.
Washington, D. C. 20006

Coordinator of Environmental
Quality Activities
Office of the Secretary
U. S. Department of Agriculture
Washington, D. C. 20250

Mr. W. H. Pennington
Office of NEPA Coordination
U. S. Energy Research and Development Administration
Washington, DC 20545

Dear Mr. Pennington,

I should like to comment on ERDA-1537, "Draft Environmental Statement, Waste Management Operations, Savannah River Plant." I am a Chemical Engineer with PhD from Cornell University, a Fellow of the American Institute of Chemical Engineers and past-chairman of its Nuclear Engineering Division. I retired two years ago from E. I. duPont de Nemours & Co. after 34 years of engineering practice, the last 22 of them at the Savannah River Plant. My wife and I and two of our children with their families live in or near Aiken. I have no current association as a consultant or otherwise with DuPont, ERDA or the nuclear industry. An article, "The Reprocessing of Nuclear Fuels", which I wrote, appeared in the December 1976 issue of SCIENTIFIC AMERICAN.

The most important and urgent waste management problem at SRP is the permanent disposal of the highly radioactive wastes from the chemical separations operations. These wastes are quite safe in the present underground steel tanks so long as SRP is being operated for the production of nuclear materials and the operation of the tanks is under the surveillance of an experienced and competent management and technical staff. The tanks, or any other surface or near-surface facility, are not acceptable, however, for permanent disposal of the wastes. This was emphasized in the report of the first National Academy of Science/National Research Council committee to the AEC in 1966.

The unacceptability in principle of near-surface disposal rules out the first two of the alternative Waste Locations listed on Appendix page I-3 of the Statement. The third alternative, "SRP Bedrock" must then be given first priority in planning, funding and manpower. The promised technical document on alternatives (page iii of the Statement) should reflect this.

If there is a safe place in the bedrock under SRP for the permanent disposal of the waste, then the waste should not be transferred to another, far-distant, repository at great additional cost and some added risk. Until the bedrock exploration is completed the question of safety of disposal at SRP

cannot be answered.

Before the investigations of bedrock at SRP were suspended in 1972 the new NAS/NRC committee, the DuPont panel of outside expert consultants, and the DuPont management had all concluded that the prospects of finding rock conditions safe for permanent disposal were good, were agreed that an exploratory shaft and tunnels were required to confirm this, and had recommended that the excavations of the shaft and tunnels go forward. (With regard to the NAS/NRC position, the passage quoted on page H-5 of the Statement does not appear to be the formal "Conclusions and Recommendations" of the Committee, which appears on pages 3 & 4 of their report. The latter material should be added or substituted in the Final Statement.)


Until the exploration is completed criteria for suitable waste forms for bedrock disposal cannot be set. It is pertinent, here, that the criterion against which safety of bedrock disposal was being judged prior to 1972 was that the waste be permanently isolated from the environment regardless of waste form or of possible degradation of containers or solid masses. Conversion of the existing SRP wastes to high-integrity solid forms will involve complex, potentially hazardous operations that will be exceedingly costly. The possibility that the high integrity of a bedrock vault might obviate some of these operations should not be dismissed lightly.

Demonstration that SRP bedrock is safe for permanent disposal of waste would not only solve the SRP problem but also open for more active consideration geological formations other than salt beds. Moreover an SRP facility might be a logical Federal repository for wastes from fuel reprocessing in the eastern United States.

The Statement is comprehensive and is a valuable reference source. The abstract of "Effects of normal operations" that occupies most of page III-1 would be more useful if each item included a brief quantitative or qualitative statement of the significance of the effect. On page III-19 there is a summary of the continuing environmental effects of the Solid Radioactive Waste Storage Site. It would be good to have a similar summary for the Liquid Radioactive Waste Tank Farms. Together these would summarize the principal effects that would persist at SRP if production operations ceased.

Thank you for the opportunity to comment.

Sincerely,


W. P. Bebbington

cc: The Hon. Butler Derrick
N. Stetson, Manager
SR Operations, ERDA



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

Mr. W. H. Pennington, Director
Office of NEPA Coordination
U.S. Energy Research and Development
Administration
Washington, D.C. 20545

Dear Mr. Pennington:

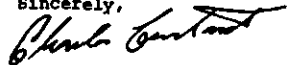
Thank you for the opportunity to review the draft Environmental Impact Statement, Waste Management Operations, Savannah River Plant, Aiken, South Carolina.

In light of the many leaks and spills of radioactive wastes which have occurred at the Savannah River Plant, we are most concerned about the possible accumulation of long-lived radionuclides in food chains. Although the presently employed monitoring program may be adequate, the results of the analyses of particular radionuclides in most of the foods and waters sampled were not reported in the DEIS. Specifically, tables should be included in the subject document which give the results of analyses of fish and vegetation in and alongside streambeds which are downstream from plant emissions and groundwater near burial ground and high-level radioactive waste tanks for ^{137}Cs , ^{90}Sr , ^{131}I , ^{239}Pu , and ^3H as a minimum.

The flocculation of seepage basin feeds in order to reduce radioactive releases into seepage basins seems like an alternative which should be implemented, provided that there is proper disposal of the radioactive sludge thus formed.

Previous comments by this Department on the DEIS concerning additional high level waste facilities at the Savannah River Plant, dated March 11, 1974 are also applicable to this environmental statement.

Sincerely,


Charles Custard
Director
Office of Environmental Affairs

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION



Cornell University
LABORATORY OF ATOMIC AND SOLID STATE PHYSICS
CLARK HALL - ITHACA, NEW YORK 14853

January 10, 1977

Mr. W. H. Pennington
Director, Office of NEPA Coordination
U.S. Energy Research and Development Administration
Mail Station E-201
Washington, D.C. 20545

re: Comments on Draft ERDA-1537

Dear Mr. Pennington:

According to NEPA, an environmental statement on radioactive waste management operations should give detailed consideration to its long-term impact (see NEPA, Section 102(2)(C)). However, Draft ERDA-1537 acknowledges this need only parenthetically, and furthermore, it fails to distinguish between the high level waste disposal and the management of radioactive contaminants at SRP. Examples:
a) p.iii: "... the descriptive material in this statement presents detailed background information that may be used as a basis for environmental assessments or statements on long-range plans as they develop. The status of the SRP long-range waste management research and development program is presented in Appendix I. ERDA presently is preparing technical documents for SRP, Hanford and Idaho installations on alternative methods for long-term management of high level radioactive wastes at these sites (described in Appendix I). These documents which will serve as the basis for environmental statements on long-range planning, should be available for public review in 1977."

b) Appendix I: With the exception of the last paragraph, the entire Appendix deals with high level waste. The last paragraph briefly acknowledges radioactivity in burial grounds, but contains nothing on general contamination.

c) Ch. I-E: "Continued control of waste effluents and stored wastes according to ERDA policies and standards will protect the offsite environment and minimize onsite effects for the long term. Waste management operations use only a small fraction of the plantsite. This fraction will require surveillance and control for the foreseeable future. Decommissioning will be addressed as part of the longer range waste management program." And: "Permanent commitments of resources include relatively small uses of energy and construction materials as well as the long-term commitment of small areas on the plantsite for waste management operations."

Comment:

The Draft Environmental Statement WASH-1537 should contain more specific information on the long-term commitment of land, and the surveillance requirements of radioactively contaminated burial grounds, seepage basins, facilities like buildings and equipment, etc., and accidentally contaminated land within and outside the plant boundaries (see Tables 6 and 10 of Appendix A). This information has to be based on present technology and practice. For example:

- (a) burial grounds and seepage basins are presently considered to be permanent;
- (b) reactors are to be partially decontaminated and entombed; according to the NRC, this is the preferred procedure based on preliminary cost-benefit studies (GESMO Hearings, subparagraph IV H, 2.9.5);
- (c) high-level waste is removed from the tanks (Appendix I-5) and solidified, and taken to a Federal disposal site. Approximately 0.5%, however, remains in the tanks (Appendix I-5).
- (d) if no method of disposal has been given preference yet, the various possible options ought to be considered.

The information requested must contain the modes of surveillance and of land use restrictions, as well as the time scales involved. Please indicate specifically for how long access would have to be restricted for activities like forestry, agriculture, recreation, or the construction of dwellings. Maps should be supplied which indicate which parts of the 300 square miles of SRP would be affected. Estimates of the annual surveillance expenses should be given. It would suffice to consider only the radioactivity at SRP to date, though contamination from solidification of currently existing waste ought to be included.

The information requested is vitally important in order to determine which steps of the technology to focus our attention on, so that we can avoid the development of permanent health hazards at and around our nuclear installations.

Sincerely,

Rolf O. Pohl
R. O. Pohl

P.S. I would greatly appreciate receiving copies of the reports on alternative methods for long-term management of high-level wastes, to be issued in 1977, as stated in Appendix I, p.1.

ROP:dsm



United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 76/1043

JAN 13 1977

Dear Mr. Pennington:

Thank you for your letter of October 21, 1976, transmitting copies of the Energy Research and Development Administration's draft environmental statement for waste management operations, [ERDA-1537], Savannah River Plant, Aiken, Barnwell, and Allendale Counties, South Carolina.

Our comments are presented according to the format of the statement or by subject.

Transuranic Waste

The segregation of transuranium-contaminated solid waste at the burial ground since 1965 appears to have been adequately described in the draft statement, for example, as on page II-120. However, the amount of this waste in storage as of 1975 is given on page I-9 of the draft statement as only 2,600 cubic meters. Since this waste was not segregated prior to 1965, it appears that older waste buried at the site must also be transuranium-contaminated. It should be clarified whether the 2,600 cubic meters of waste includes such older unsegregated waste. In addition, the final statement should clarify what measures are recommended for ultimate disposition of waste in any burial sites that may contain unsegregated transuranic wastes.

Waste Storage Tanks

Considerable detail on weld radiography and inspection has been provided in the draft statement on page II-94. However, we feel that further information on future weld and inspection procedures is needed in view of the past history of tank leakage, the occurrence of most leaks in close proximity to welds, and recent public concern over welding procedures and inspections on the buried oil pipeline in Alaska. It would be advisable to provide information in the final statement also on who will inspect the x-rays of welds on future waste storage tanks and what standards will be required for examination and filing of such x-rays for future reference.



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2

In a previous environmental statement on additional high level waste facilities at the Savannah River Plant, dated August 1974, (WASH-1530), it was stated on pages II-16 and II-17 that "The use of tank 16 H was restricted to a reduced volume until it was removed from liquid storage service in early 1972." However, table II-13 in the present draft statement shows that a temperature profile was made in stored waste in tank 16 as recently as 1975. The text states on page II-106 that the tank "has been emptied except for a small heel of wet sludge," and in Appendix I on page I-6, this waste is described as being "in the form of a residual sludge layer about 20 inches thick." This residual layer of sludge would evidently contain much, if not most, of the radioactivity originally contained in the tank. In view of the fact that "approximately 300 leak sites have been identified" in tank 16 as mentioned in table II-13, we are concerned that the wet sludge might still be leaking into the annular space around the tank. The final statement should indicate what measures are planned for removal of radioactive material from the annular space when the tank is completely deactivated.

Disposal of Plutonium

We have recently reviewed the Nuclear Regulatory Commission's Supplement 1 to WASH-1248, entitled "Environmental survey of the reprocessing and waste management portions of the LWR fuel cycle." That document stated on page 4-128 that present policies prohibit the burial of plutonium except at the Hanford site. However, the present draft environmental statement indicates on page II-124, ff. that an appreciable amount of waste containing plutonium-238 and plutonium-239 was buried in earthen trenches at the Savannah River Plant in 1975, including equipment containing plutonium-238 in an amount described as "less than 140 Ci." It is stated further that such equipment is excluded from surface storage by ERDA Manual, Chapter 0511. It would be helpful in the final statement to clarify present policies regarding burial of plutonium in earthen trenches, whether consistent policies are being followed with regard to burial of plutonium at the Savannah River Plant, the Hanford Reservation, and the Idaho National Engineering Laboratory, and whether such plutonium will be fully recoverable from the earthen trenches.

K-40

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

3

if such an option should be favored at some future date. It was stated on page iv of the draft statement that "None of the possible options for long-range management of SRP wastes is being foreclosed by current or projected operations."

Leakage of Radioactive Wastes

In the summary of radioactive deposits in the soil discussed on page II-40 in the draft statement, three of the largest such deposits are described, and reference is made to appendix A for additional information. The third entry in table 10 on page A-94 of the draft statement shows that one deposit omitted from the discussion on page II-40 contains 2,000 to 3,000 curies of radioactivity, remaining after decay since November 1975. This is an amount larger than the remaining radioactivity at two of the three deposits that were described on page II-40. It is not clear as to why this accidental release was omitted from the discussion.

Further, it is mentioned on page I-6 in the draft statement that only one leakage episode from a tank into the ground has occurred. It would be advisable to mention at the same place in the final statement that several leaks occurred into the ground during transfer of liquid from H-Area waste tanks, as mentioned on page II-40 in the draft statement.

Nearly three-fourths of the 53 spills or leaks of radioactive material listed in table 10 of appendix A of the draft statement are shown only in general terms as having an activity of "less than one curie." In only four cases are specific or approximate values for low levels of activity (less than five curies) given in the table. Because of the large number of values given as less than one curie, by comparison with the small number of specific estimated values, it would be helpful for the final statement to explain the basis for estimating the amount of activity.

It is stated on page III-90 of the draft statement that "Although stress cracks in several of the steel primary tanks have allowed waste to pass into the secondary pans under and around the primary tanks, leakage outside the secondary container into the surrounding soil occurred only once." This is followed by an account of a leak of 10 to 500 curies of cesium-37 into the soil from tank 16 in 1960. However, it had been stated earlier on page I-6 that "leakage

4

of waste from cracks in a primary tank past the five-foot-high secondary steel pan or liner and the concrete container into the surrounding ground has occurred only once"; this is followed by an account of a leak in 1961 from tank 8 of 3,000 to 5,000 curies of cesium-37 into the soil. It is not understood why both leaks should not be mentioned in each of these two places in the final statement.

In the detailed account of the history of tank 16 on page C-9 of the draft statement, the largest number of leaks that is mentioned is 175 leaks. However, the number of leaks in the tank was given as "approximately 300" on table II-13, and a still larger number was given on page III-90 of the draft statement, where the number of leaks in tank 16 is described as "about 350." These numbers of leaks from tank 16 should be reconciled in the final statement.

Chemical Separation of Radionuclides

Since the "tan clay" and "green clay" and the piezometer measurements made in the H area are so important in the natural mitigation and prevention of impacts on the principal aquifer, we believe the locations of the piezometers should be shown on a map at suitable scale and that other documentation for the reported great areal extent of the "green clay" should be given in the final statement. This would be especially true in the vicinity of the F area, the burial ground, and the seepage basin and in the areas downgradient from these facilities to the nearest streams. Furthermore, although the draft statement indicates from observation of various releases the effects of selective sorption of radionuclides, the final statement should present at least examples or ranges of actual ion-exchange capacities and any other characteristics which will be significant in evaluating future effects. Ultimate limits and reversibility of some types of sorption mechanisms should be discussed with reference to the appropriate materials found at SRP.

The final statement should also evaluate the potential for effects of the discharge of detergents (15,000 pounds per year) to the seepage basins on ion-exchange, sorption, and radionuclide retention. Disposal of detergents in the seepage basins was begun in 1976; therefore, a careful scrutiny of impacts seems warranted. As examples of the possible effects

of detergents on seepage basin effectiveness, we have cited below two recent abstracts published in "Pollution Abstracts." The first is item 75-01925 in volume 6, number 2, and the second is item 76-03792 in volume 7, number 4.

1. "E. I. Orlova, A. V. Smirennaya, R. A. Chelysheva. GIGIENA I SANITARIYA, No. 3:50-53, 1974. In Russian; Eng. sum., illus., refs., from Sum & SS. In nontechnological effluents with detergents, ^{60}Co changes into a chemical state that is not sorbed by rocks. This is due to the formation of negatively charged combinations of Co with Trilon B (a chelating agent). To diminish the migrating properties of ^{60}Co , it is suggested to exclude Trilon B from detergents used at atomic electric power stations."
2. "S. Sakata (Japan Atomic Energy Research Inst., Oarai Research Establishment, Narita-Cho, Oarai-Machi, Higashi Ibaraki-gun, Ibaraki-ken, Japan), K. Katsuyama H. Aikawa. International Atomic Energy Agency. WASTE MANAGEMENT RESEARCH ABSTRACTS 10, 1975. p. 14. Eng. abs. only, from AA.
The liquid waste which contains ^{51}Cr , ^{58}Co , and fission products arises mainly from the JMTR; it is given a 2-step treatment with ferric hydroxide and calcium phosphate $\text{Ca}_3(\text{PO}_4)_2$. The ^{137}Cs content of the waste has recently increased, and ways to effect its removal have been investigated. Powdered nickel ferrocyanide at 60 ppm and pH 10-11 provides a decontamination factor of about 100; this is added with the $\text{Ca}_3(\text{PO}_4)_2$ at the 2nd flocculation. Another problem involves the deleterious effect of the detergent in the laundry waste on the decontamination. A higher pH suppresses this effect, but also impairs the sedimentation characteristics of the flock. The pH was compromised at 8-9; an excess of Ca^{2+} to PO_4^{3-} improves the calcium phosphate decontamination."

K-42

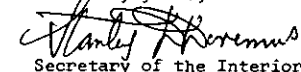
Accumulation of Radionuclides in the Environment

Significant quantities of long-lived radionuclides have been discharged from the plant to tributaries of the Savannah River. The cumulative total through 1975 corrected for decay for cesium-137 is given as 449 Ci on page A-60 of the draft statement. Cesium is known to adsorb to sediments in the stream environment and can thereby accumulate in the stream-bed from where it can later reenter into the biologic food web. This accumulation has been observed in the Clinch River below Oak Ridge National Laboratory in Tennessee according to the 1967 comprehensive report of the Clinch River study by Oak Ridge National Laboratory (ORNL-4035). Data in table 4 on page A-9 of the present draft statement also show that most of the cesium released is not transported downstream in the Savannah River. However, the draft statement has no information on the whereabouts of the released cesium that is not found in transport. Cesium retention in stream sediments downstream from the plant should be discussed and relevant data, if available, should be presented in the final statement.

Further retention and accumulation of radionuclides released to the river would also be likely in the estuary about 120 miles downstream from the plant. This might also involve radionuclides other than cesium. This subject should also be discussed in the final statement.

We hope these comments will be helpful to you.

Sincerely yours,


Secretary of the Interior

Deputy Assistant

Mr. W. H. Pennington, Director
Office of NEPA Coordination
Energy Research and Development
Administration
Washington, D. C. 20545

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION



UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

January 21, 1977

Mr. W. H. Pennington, Director
Office of NEPA Coordination
Energy Research and Development Administration
Washington, D. C. 20545

Dear Mr. Pennington:

This is in reference to your draft environmental impact statement entitled "Waste Management Operations, Savannah River Plant, Aiken, South Carolina." The enclosed comments from the National Oceanic and Atmospheric Administration are forwarded for your consideration.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving ten copies of the final statement.

Sincerely,

Sidney R. Galler
Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

Enclosure: Memo from NOAA - National Marine Fisheries Service



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Duval Building
9450 Gandy Boulevard
St. Petersburg, FL 33702 JAN 11 1977

January 6, 1977

FSE61/FAC

TO: Director
Ofc of Ecology & Environmental Cons., EE
Robert L. Schuler JAN 11 1977
THRU: Acting Assistant Director for
Scientific & Technical Services, F5
FROM: William H. Stevenson *William H. Stevenson*
Regional Director
SUBJECT: Comments on Draft Environmental Impact Statement -
Waste Management Operations, Savannah River Plant,
Aiken, SC (ERDA) (DEIS #7610.43)

The draft environmental impact statement for the Waste Management Operations, Savannah River Plant, Aiken, South Carolina, that accompanied your memorandum of October 29, 1976, has been received by the National Marine Fisheries Service for review and comment.

The statement has been reviewed and the following comments are offered for your consideration:

General Comments:

Because of the inland location of the Savannah River Plant and the relatively low quantity of radionuclides released into the Savannah River, waste management operations should normally have no adverse impact on living marine resources in coastal waters of Georgia. We believe, however, that the subject DEIS should include estimates of current and possible accidental releases of radionuclides and other contaminants introduced into the Savannah River that do or will enter the Savannah River estuary and adjacent coastal waters. In addition, estimates should be made of the probable effect that accidental releases of radionuclides will have on living marine resources or their use by man.

cc:
F53 (3)
FSE611



U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION



3110 MAPLE DR., SUITE 407

ATLANTA, GEORGIA 30306

TELEPHONE: 404/262-1967

January 27, 1977

Mr. W. H. Pennington
Office of NEPA Coordination
U.S. Energy Research and
Development Administration
Washington, D. C. 20545

Dear Mr. Pennington:

In reviewing the ERDA document, "Draft EIS, Waste Management, Operations, SRP, Aiken, S.C." (ERDA-1537, October 1976), we have found several areas of concern to us because of their impact on the people of Georgia. We feel that our concerns should be considered and answered by ERDA in the Final EIS on SRP waste management operations. Our comments are itemized below.

1. Off-Site Radiation. The basis of the EIS is the compilation of the various releases to the ecosystem by SRP, both radioactive and nonradioactive, through previous operation and management techniques. It is assumed in the report that future operations will continue, both in quantity and with previously demonstrated success as controlling releases to the ecosystem. In the past 21 years, through 1975, these releases are claimed to have been sufficiently small that the resulting off-site radiation damage to the nearby human population has been small compared to the normal background radiation from either natural sources or from weapons test fallout. The health effects which would result from these releases are thought to be similarly small in number, when compared with those due to background radiation.

However, the population dose commitment from these releases is calculated using a model which includes meteorological dilution effects and radiation dose effects of various ingestion pathways (vectors). It is difficult for the public to directly criticize this model; however, several of the "dose conversion factors" are not given in table G-5, page G-26, 27. It is especially troublesome that vectors for radionuclides which can be measured in the environment around SRP are left out. Specifically, the ^{89}Sr , ^{90}Sr , ^{134}Cs , and ^{137}Cs dose conversion factors resulting from atmospheric release through surface water, vegetable, meat, and milk vectors, and the dose conversion factors for ^3H are deleted for atmospheric release through surface water, vegetable and meat vectors. As these sources represent a large fraction of the radioactivity produced and released at SRP, we feel they should be included in the analysis. In fact, all dose conversion factors should be included, even though they are estimated to be vanishingly small.

Mr. W. H. Pennington
January 27, 1977
Page Two

Above all, we feel that the tritium release could be significantly reduced if it is captured at each source of high concentration. Tritium is the predominant form of radioactivity released and is the one radioisotope which is not easily removed from the ecosystem once it is dispersed. For example, the tritium concentration has been measured at 6×10^{-6} $\mu\text{Ci/cc}$ in rain water and in vegetable samples near the plant. This tritium also shows up in milk with 9.7×10^{-7} $\mu\text{Ci/cc}$ concentration.

We are concerned about the calculated dose of 800mrem/yr. in the swamp downstream from the site. It is also puzzling that no assessment was made of the overall effects of this level of radiation on the plant and animal life in the swamp, or the predicted migration of these materials in years to come.

2. Storage Tanks. We are concerned with the continued storage of High Heat Waste (HHW) in liquid or salt/sludge form, in large storage tanks located near the ground surface and in proximity to the local water table. The alternative of long term, intensive management of these wastes in such form is difficult to accept, since there is considerable evidence at SRP and Hanford to indicate that these tanks will leak within their design lifetimes. The construction of additional tanks of similar design at SRP using low carbon steel should be reconsidered, with the option of the acid waste stream stored in stainless steel given maximum priority.

The short term economic advantage of storing neutralized acidic waste in low carbon steel tanks is not realistic if the tanks can be used over several cycles of fill, solidification of HHW, then reduction of the sludge/salt to stable form for long term storage. The use of a low carbon steel, clad with a thin layer of stainless steel, should be considered as a method of reducing cost while providing corrosion resistance. We question the continued use of tanks which have demonstrated leakage, for periods of as long as 10 years after the leaks were discovered. Such tanks are likely to be weakened structurally at the affected welds. We would like to see estimates of the effects of earthquakes and other stresses on such weakened tanks.

Furthermore, we did not note any assessment of the possible damage to the tank cooling system due to earthquakes or other shocks (such as explosions). It appears that if the cooling system were disabled for an extended period of time the resulting releases of radioactivity off the site would be greater than predicted.

3. Earthquakes. Although it is stated that the facility is designed for the worst probable earthquake, some assessment should be made of the effects of a larger quake which could possibly occur. What would be released to the environment in such a case?

Mr. W. H. Pennington
January 27, 1977
Page Three


What would be the effect of the design base earthquake or a smaller quake on those tanks that are already leaking due to stress corrosion cracking?

4. Low Level Wastes. We note the low level waste trenches are only 10 feet above present ground water levels. In the light of experience at Hanford where waste migrated laterally 90 feet and 70 feet deep, or at Maxey Flats where movement of one kilometer has been detected, establishment of a ten foot barrier seems excessively casual, if not irresponsible.

5. Chemical Discharges. Increasing numbers of examples of the harmful effects of using the environment as a disposal system would seem to generate a more careful assessment of the consequences of such a practice at SRP. A mere cataloging of the amounts of chemicals, some of which (like mercury) are extremely harmful to humans, is inadequate.

6. Depleted Uranium Metal Targets. The description of failures under this heading is disturbing. What is the frequency of these phenomena? Is there not a possibility that a sequence of events might ensue which could result in a vapor explosion? If this be so, though unlikely, should it not be expressed and dealt with?

In conclusion, we must comment on the general nature of this EIS in the context of the development of atomic weapons and nuclear energy in the U.S. Much of the public opposition to these developments, particularly to their environmental effects, has been brought about by the shrouds of secrecy, the use of misleading information, and the lack of answers to fair questions, that have characterized the behavior of the AEC and currently the NRC and ERDA. This EIS, while providing much more data than has been previously available, still falls short of full disclosure of facts that the public needs to evaluate the SRP plans. This is particularly serious in the portions of the EIS devoted to combined effects. Thus it appears that ERDA is again revealing a basic attitude of "Do it now and worry about some way to fix it tomorrow." We do not believe that American technology needs to be or should be burdened with this careless management attitude. We trust that the Final EIS on SRP will dispel this reaction by providing solutions and answers to all the reasonable questions asked.

Sincerely,

Cecil R. Phillips
Executive Director

CRP:cmh



Office of Planning and Budget
Executive Department

James T. McIntyre, Jr.
Director

G E O R G I A S T A T E C L E A R I N G H O U S E M E M O R A N D U M

TO: Mr. N. Stetson
Manager
U. S. Research and Development
Administration
Savannah River Operations Officer
P. O. Box A
Aiken, South Carolina 29801

FROM: Charles H. Badger, Administrator
Georgia State Clearinghouse
Office of Planning and Budget

DATE: January 26, 1977

SUBJECT: RESULTS OF STATE LEVEL REVIEW

Applicant: U.S. Research and Development Administration

Project: Draft Environmental Statement - ERDA 1537

State Clearinghouse Control Number: 76-11-10-21

The State of Georgia requests that the attached comments and concerns be thoroughly and adequately considered and specifically addressed prior to finalization of the environmental impact statement (EIS).

The Energy Research and Development Administration (ERDA) should be aware that the State of Georgia is opposed to any bedrock or other underground storage of radioactive materials. Furthermore, it is emphasized that the State of Georgia does not concur with the position of ERDA that consideration of bedrock or other long-term storage of radioactive materials does not fall within the purview of this Environmental Impact Statement. ERDA is requested to include adequate consideration of the long-term alternatives and plans for waste storage as a part of this Environmental Impact Statement prior to finalization of the documentation. It is suggested that perhaps a supplement to this Environmental Impact Statement be prepared and submitted for review in draft form by the State prior to any final documents being prepared.

If it is the continuing position of ERDA that the issue of bedrock or other long-term storage of radioactive materials is not appropriate for consideration in

U S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Mr. Stetson
January 26
Page Two

this Environmental Impact Statement, then the State requests that the following actions be taken: 1) Notify the State Clearinghouse of ERDA's position; 2) Notify directly the Governor of Georgia regarding ERDA's position; 3) Provide to both the Clearinghouse and the Governor a thorough explanation of ERDA's decision to not comply with the requests of the State of Georgia as outlined in these comments.

The following State agencies have been offered the opportunity to review and comment on this project:

Office of Planning and Budget, Executive Department
Georgia Department of Natural Resources

CHB:lee

cc: Warren Howze, SFRC A-95 Coordinator (all enclosures)
David Tundermann, Council on Environmental Quality (all enclosures)
Elmer Whitten, Director, South Carolina State Clearinghouse
Leonard Ledbetter, Director, Environmental Protection Division
Bruce Osborn, Executive Department, State of Georgia
Ray Siewert, Coordinator, Department of Natural Resources
Cecil R. Phillips, Executive Director, Georgia Conservancy (all enclosures)

Enclosure: Review comments prepared by the Georgia Department of Natural Resources, dated January 3, 1977.

Letter prepared by the Honorable Jimmy Carter, Governor of Georgia, dated January 6, 1975.

STATE OF GEORGIA COMMENTS

REGARDING:

Draft Environmental Statement - "Waste Management Operations - Savannah River Plant; Aiken, South Carolina", ERDA - 1537 (October, 1976)

January 3, 1977

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

A review of the Draft Environmental Statement for the Savannah River Plant Waste Management Operations has been completed. The following comments are in order:

A. Non-radioactive Wastewater Discharges

1. The E.I.S. indicates (II-46) that spent drum cleaning solution is discharged without treatment in 16,000 gal. batches "after analyses to confirm acceptability of the release." The "analysis" to determine "acceptability" clearly applies only to radioactive contamination. Discharge contains 10,000 lb/yr of trisodium phosphate and 9,000 lb/yr of phosphoric acid. Raw discharge of this wastewater does not reflect good waste treatment practice and would not comply with minimum treatment requirements in Georgia.
2. According to the E.I.S. (II-53), various unspecified wastewater sources contribute to the trade waste system which is "designed to handle ordinary waste chemicals that are not contaminated beyond trace levels." Although "trace levels" clearly refers to radioactive contamination only, this wastewater is discharged untreated. Throughout this E.I.S., the assumption seems to be that any processing waste not contaminated with radioactive material requires no treatment. Non-federal public and private facilities are not generally allowed the luxury of discharging all process wastewater untreated after merely confirming that it is not radioactive.
3. Analytical laboratory wastewater is discharged without treatment (II-46). No chemical or biological characterization of this wastewater is given.
4. The E.I.S. states (II-55, 56) that sulfuric acid and sodium hydroxide used as regenerants in the deionized water systems in the Reactor and Separations areas are discharged after "moderate neutralization." Water regenerants in the Heavy Water area don't even receive "moderate" neutralization. Moderate neutralization or non-neutralization does not appear to constitute good wastewater treatment practice as would be required by various State and Federal regulations for non-Federal facilities.
5. Coagulant chemicals and suspended solids removed in water treatment facilities are discharged back to the Savannah River (II-55, 56). The draft E.I.S. indicates (V-15) that alternative procedures were studied but rejected as uneconomical. Discharge of solids removed in water treatment plants back to surface waters by non-Federal facilities has not been allowed in various permits issued by EPA. These non-Federal facilities are not generally allowed the alternative of ignoring such requirements because they are considered uneconomical.
6. The E.I.S. indicated (V-15) that conversion from chromate-containing to organic corrosion inhibitors is being studied. The Georgia Environmental Protection Division is presently requiring other dischargers in the same area to either discontinue use of metallic inhibitors or provide treatment to remove the metals from the wastewater. The Division sees no good reason why a more lenient standard should be applied to this Federal facility.
7. The report states that the use and disposal of polychlorinated biphenyls (PCB's) at SRP has been specifically controlled since 1972. How were they previously handled before 1972 when they weren't controlled? Since PCB has been detected in sediments from Four Mile Creek and Pen Branch it would be reasonable to expect that this residual concentration is a result of operations prior to 1972. The conclusion presented that off plant sources may be the primary contributors of PCB may not be correct. A detailed discussion of this issue is necessary and in particular its probable relationship to any possible future actions that might be needed to remove previously deposited PCB.
8. In Section III-73 of the report, the concentration of several parameters in Ash Basin effluent water is compared with Drinking Water Standards. This presentation shows the concentration of selenium to be at 0.02 parts per million in the effluent vs 0.01 parts per million for the drinking water standard. This is double the standard yet there is no discussion of the significance or impact presented in the report.
9. In Section V-15 of the report under "Alternatives Studied but not Adopted", it is indicated that alternative methods for water treatment associated with chemical discharges to seepage basins are not economically feasible. There is no discussion of what methods were studied nor is there any indication of the basis for reaching the conclusion that was reached. This could be a very important issue as it relates to the equilibrium adsorption of radionuclides in the soils beneath the basins. (This is discussed further in additional comments for radiological discharges).

B. Non-radiological Atmospheric Discharges

1. The report indicated (III-59) that the calculated contributions to the annual average SO_2 ambient concentration at the SRP boundary is less than 33 micrograms per cubic meter. This compares to the Georgia standard of 43 micrograms per cubic meter. This is 76 percent of Georgia's standard and essentially means that any industrial development on the Georgia side of the Savannah River near SRP must be limited. Fuel burning equipment of the capacity being used should reasonably not be allowed to make such a reported impact. In effect, it is endangering the economic development of Georgia.
2. The report gives conflicting efficiencies of the electrostatic precipitators that were installed in November, 1975. On page II-60 a value of greater than 99% is reported while on page III-61 they report a value of 95%. Also, no increment of particulate contribution to the ambient air by SRP is reported in the EIS.
3. Under normal conditions there should be no significance from other non-radioactive air emissions, however, there is a possibility that hydrogen sulfide odor could be detected during adverse meteorological conditions.

C. Radiological Issue Comments

1. About 80-130 million gallons of water containing various radionuclides are discharged to several different seepage basins at SRP. In addition to the radionuclides other chemicals are also discharged to these same basins (600,000 lbs of HNO_3 , 200,000 lbs of NaOH , 12,000 lbs of H_3PO_4 , 1200 lbs $\text{Na}_2\text{-Cr}_2\text{O}_7$, and 50 lbs of H_2O .) The report makes a strong case for the ion exchange capability of the soil in the retention of the radionuclides, however, there is no evidence presented to show any recognition of the effect of the chemicals on the adsorption capability of the soils. If transport models are being used to predict the distribution and concentration of radionuclides in the groundwater contacting the soils, how have the shifts in equilibrium adsorption due to the chemicals been factored into the models?
2. The EIS (III-78) considers the additive impact of other non-SRP facilities. One such facility is the proposed Barnwell reprocessing facility and the report indicates that 16,000,000 curies of Kr-85 will be discharged via atmospheric releases from Barnwell. SRP discharges 520,000 curies of Kr-85 per year itself. These numbers compare to the SRP guide release number at 950,000 curies. Very little attempt is made in the report to discuss the additive impact of both facilities

in relationship to SRP's waste management program. This is an important issue and it should be discussed thoroughly in both Chapters II, III, and IV of the report.

3. In section V-6 of the report, alternatives associated with Kr-85 atmospheric discharges are discussed. It is stated that there are no plans for an active research program aimed at Kr-85 removal from effluent gases during fuel reprocessing and that pertinent R/D at other sites will be followed for possible application. This is improper consideration of the whole issue. We agree that research is not necessary at SRP and it is not necessary elsewhere either because it has already been completed and commercial equipment for Kr-85 removal is available now. This is supported by ERDA's own contractor, Battelle, in its preparation of ERDA-76-43 report entitled "Alternatives For Managing Wastes From Reactors and Post-Fission Operations in the LWR Fuel Cycle". Georgia expects ERDA to exercise its responsible role in the establishment of an abatement plan and timetable for the control of Kr-85 releases to the atmosphere. This should be treated properly in the EIS before it is released in final form. Georgia's position has already been expressed on this issue regarding the proposed Barnwell facility. (see Governor Carter's letter attached)

D. Bedrock Storage Issue

The EIS for the SRP does not cover the use of the SRP site for permanent storage, particularly bedrock storage. ERDA has indicated that it is beyond the scope of this report because a separate EIS on long range waste management plans is currently in preparation. Georgia objects strongly to this piecemeal consideration of waste management plans because current operations and future plans must be tied together because of the long half-life of many of the isotopes in question. Exclusion of long term waste management plans from the EIS does not allow for an overall view of waste handling and violates the basic reasons for an EIS in the first place. An EIS is supposed to deal with alternatives to the proposed actions; in this case, current actions. The question of the irreversible and irretrievable commitment of resources is key to intent of an EIS. Since work has been performed on the concept of bedrock storage and it is called out as the base possibility for long term waste handling, it must be considered in the present EIS in order to satisfy the sections of an EIS just mentioned.

The concept of using SRP for bedrock storage has already been postulated by ERDA and work has occurred on site. This is discussed in WASH-1202 (1972, 1973). In addition report, SRO-TWM-76-1, states that bedrock storage is the "principle" candidate for long

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

term storage. Since bedrock storage has already been advocated and original projections of FY-81 were indicated for beginning of actual storage, this is an issue that is not long range. The present draft EIS must consider this issue and Georgia must insist that the EIS not be issued in final form until it is considered.

Since the fresh water aquifer which serves all of South Georgia lies underneath this geographical area Georgia is very concerned about any attempt to establish a bedrock storage site in the vicinity of SRP. In 1972, Georgia's position of opposition to bedrock storage at SRP was established by Governor Carter and that position remains unchanged. The same concern which forms the basis of Georgia's position was also expressed by EPA in 1972. EPA stated that the Tuscaloosa aquifer contains very large and economically valuable supplies of fresh water and that any proposed storage of radioactive wastes in its proximity should be viewed with extreme caution.

The question of seismic activity in a geographical sphere of influence which could incorporate SRP has been treated very poorly in the current draft EIS, on page II-160 the report indicates that on the basis of three centuries of recorded history of earthquakes, an earthquake above intensity of VII of the modified Mercalli scale would not be expected at SRP. Yet a few sentences later the report states that during the past 100 years, the area within a 100 mile radius of the SRP has experienced one shock of intensity X, one shock of intensity VIII, two shocks of intensity VII, and twelve shocks of intensity V. At first reading these two statements appear to be in conflict with each other and more explanation is necessary. Also, the Richter scale is usually used to report earthquake activity to the general public so if the modified Mercalli scale is going to be used in the EIS, the intensity levels should be identified as in the following examples:

Modified Mercalli Intensity Scale

XII	Damage nearly total; Large rock masses displaced.
XI	Rails bent; Underground pipeline out of service;---
X	Most masonry and frame structures destroyed with their foundations; Serious damage to dams; Large landslides-----
IX	General Panic; Masonry destroyed-----
VIII	Twisting, fall of chimneys, Factory stacks, Monuments, towers, and elevated tanks-----
VII	Damage to masonry; Small slides; Concrete irrigation ditches damaged-----

The report mentions the Bel Air Fault northwest of Augusta, Georgia and admits that the rate and character of its movement has not yet been resolved, nor has its significance to the tectonic framework of the eastern U.S. been determined. The many other faults in this area of Georgia are not even mentioned in the report. The poor treatment of the subject of seismic activity in the EIS leaves Georgia no alternative but to reaffirm strongly the earlier objection to bedrock storage.

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION



Executive Department

Atlanta 30334

Jimmy Carter
GOVERNOR

Frank Moore
EXECUTIVE SECRETARY

January 6, 1975

Mr. Robert M. Lazo, Esquire
Chairman
Atomic Safety & Licensing Board Panel
U. S. Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Lazo:

We have reviewed available material regarding the Barnwell Nuclear Fuel Plant (BNFP), including testimony presented at the recent Hearings on construction and operating licenses for that facility. We are convinced that Georgia has strong reasons to be concerned about the Barnwell plant and about the tendency to concentrate major nuclear installations of that kind adjacent to Georgia in South Carolina.

Specifically, we are concerned about the continuing buildup of such facilities bordering the Savannah River, in terms of the increasing potential for direct radiation exposure of Georgia citizens, the probable continuing buildup of radioactive contamination of the Savannah River, and the steadily increasing risk of a major nuclear accident that could greatly affect Georgia people and Georgia's natural resources.

As the result of our thorough review of the available material and of the testimony presented thus far, I feel that the following requests are necessary to serve the best interests of Georgia, and trust that they will, therefore, receive your most serious consideration.

1. It is requested that AEC require the immediate installation of equipment to remove krypton-85 from the gaseous plant wastes at the BNFP, and to store the collected gas in a safe manner at the site until long-term storage facilities can be made available.

We believe that the necessary technology for krypton-85 collection, containment and storage is currently available, to the extent that only full-scale installation and operation at a nuclear fuel recovery plant remain to be done. Testimony at the recent Hearings to the effect that a pilot-scale plant (10 percent of full capacity) should now be tested, and that a full-scale installation will require 10 more years, has the familiar sound of earlier times when environmental protection measures of any sort could never be installed because more research was always needed.

2. It is requested that AEC require the immediate initiation of a serious research and development program to provide as soon as possible for effective collection, containment and storage of tritium at the BNFP; it is further requested that AEC take similar action to reduce tritium discharges from the SRP.

It is recognized that the technology for tritium removal and containment is not immediately available for a nuclear fuel recovery plant. However, the projected release from the BNFP is large, about 700,000 curies/year; this is approximately equal to current normal releases from the SRP, to say nothing of the recent 500,000 curie "accidental" release, and the combined normal tritium discharge from the SRP-BNFP complex can be expected to approach 1,500,000 curies per year. Most of it will be released as water vapor, at least in part, because the quantities are too large for discharge into nearby creeks without exceeding acceptable limits for the concentration of tritium in water. However, whether it is released as water vapor or directly to a nearby watercourse, the entire discharge enters the hydrologic cycle. We regard the projected doubling of tritium discharges at this location as highly undesirable.

3. It is requested that AEC require the operator of the BNFP to provide a complete and detailed plan for emergency action in the event of a major accident involving the escape of a large amount of radioactivity to the environment; such plan should incorporate immediate notification of responsible authorities in Georgia, as well as in South Carolina, and should be adequately coordinated with other existing federal and State emergency programs and systems.

During operation, tremendous quantities of radioactive fission products, as well as large amount of fissionable material, will be stored on site at the BNFP. Even though the AEC assessment of the likelihood of a major accident involving a large release of radioactivity to the environment indicates that no such event should occur, it is not conservative to assume that a major accident is truly impossible, or that a plant is absolutely safe. It seems conceivable, for example, that the "impossible" earthquake, or deliberate sabotage, could lead to a large release of radioactivity. Under such circumstances, it is only prudent to plan for the event, even though it is not expected, and to be fully assured that nearby populations and natural resources can be adequately protected.

4. It is requested that AEC require the BNFP operator to conduct sufficiently detailed and extensive effluent and environmental monitoring programs, both pre- and post-operational, to be certain that all environmental radioactivity originating at the Barnwell facility can be distinguished, identified and quantitatively accounted for; it is further requested that AEC undertake similar action as regards radioactive releases from the SRP

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

In view of the growing number of major sources of radioactivity in the area, and the announced plans of the Georgia Power Company for a major nuclear power station across the River, it is regarded as imperative that each facility be able to fully distinguish their own wastes in the environment, so that there can be strict accountability as regards environmental impact. It should be noted that the common practice of gross assay of samples for kinds of radioactivity (alpha, beta, gamma) cannot be sufficient to establish accountability, and hence, that a substantial amount of quantitative isotopic analyses will be necessary.

I feel it necessary to inform you that Georgia will oppose any further concentration of major nuclear facilities in the Savannah River Basin, at least until more effective control of krypton-85, tritium and other radioactive substances has been demonstrated at existing facilities.

At this time, the State of Georgia requests permission to participate in the Barnwell proceedings as an interested state in accordance with § 2.715(c) of the Rules of Practice as set forth in the Rules and Regulations (Title 10 - Atomic Energy) for the U. S. Atomic Energy Commission. Please address all correspondence pursuant to this request to: Mr. J. Leonard Ledbetter, Director, Environmental Protection Division, 270 Washington Street, S.W., Atlanta, Georgia 30334.

Thank you for your assistance

Sincerely,

Jimmy Carter
Jimmy Carter

JC:sch

cc: Dr. Dixie Lee Ray
Mr. Manning Muntzing
Honorable George Busbee, Governor-Elect



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 9 1977

W. H. Pennington, Director
Office of NEPA Coordination
Energy Research and Development
Administration
Washington, D.C. 20545

Dear Mr. Pennington:

The Draft Environmental Statement (DES) for Waste Management Operations at the Savannah River Plant (SRP), ERDA-1537, was circulated for review and comment to appropriate branches of the Nuclear Regulatory Commission (NRC). In accordance with CEQ Guidelines, reviewers were asked to limit their comments to the following areas of special concern to the NRC:

1. Radiological health and safety aspects of the proposed operations, and
2. Impact of the proposed operations on other NRC licensed activities

Except for the comments below, the NRC reviewers considered the coverage of NRC's concerns in the DES to be adequate, with the required consideration of the potential effect on background radiation levels of interactions between SRP operations and the Vogtle Nuclear Plant, the Barnwell Nuclear Plant and the burial ground operated by Chem-Nuclear Services. Some of the specific comments are directed at maintaining releases from the facility to "as low as is reasonably achievable" (ALARA) levels.

The detailed comments are given below:

1. Page II-9 thru II-11 Building Air Flow

The design of the Activity Collection (confinement) System does not incorporate a means to control the humidity of the exhaust air in the event of an accident before the air is passed through the HEPA filter-charcoal adsorber system. An engineered safety feature (ESF) filter system should consist of heaters, demisters, prefilters, HEPA filters, charcoal adsorbers, and after filters.

2. Page II-11 Fuel and Target Storage Basin

Consideration should be given to replacing the portable demineralizers in the Fuel and Target Storage Basin cleanup system with a permanent

system. Also, the handling of demineralizer regenerant solutions is not described. Systems should be provided to maintain discharges of regenerant wastes to ALARA levels.

3. Page II-16 Process Heat Exchanger Leakage

The report states that leakage in the process heat exchangers represents approximately one-fourth of the total releases from the reactor area. However, no mention is made of measures taken to isolate the leaking heat exchanger or to otherwise control releases. The capability of the systems to maintain releases ALARA in the event of process heat exchanger leakage should be described in the DES.

4. Page II-18 thru II-19 Aqueous Releases

In order to achieve optimum control of releases and to maintain releases of radioactive materials in liquid effluents ALARA, releases should be collected in monitor tanks and each batch sampled before discharge. Releases should be monitored continuously and if activity levels exceed predetermined limits, the capability should exist to further process these effluents.

5. Page II-28 Canyon Building Ventilation System

In order to maintain releases of radioactive iodine as low as is reasonably achievable, consideration should be given to adding iodine absorbers after the sand filters used to process effluents from the canyon processing areas and process vessel vents.

6. Page II-120 TRU Waste

There appears to be an inconsistency in the methods for handling of drummed solid waste (20 year retrievable storage) versus bulky solid waste and contaminated equipment (buried directly in earthen trenches). The latter method could lead to migration of activity into the ground water with eventual release to the environment. The environmental statement does not provide the details necessary to show that radioactive materials contained in these wastes will not migrate.

7. Pages III-82 thru 87 Spills During Waste Transfer

In order to prevent overflow from tank risers and vents, level controllers and alarms that will automatically terminate transfer of waste into the tank should be installed in all tanks.

8. Long-term Waste Management and Retrievability

The DES Summary states, in effect, that options for long-range waste management and retrievability are not being foreclosed by current operations. However, retrieval of the salt cake from storage tanks has not been demonstrated to date. In addition, retrieval of the following wastes may not be technically feasible or economically practical:

- residual sludge in storage tanks
- sludge in the R emergency basin
- salt cake which has leaked into annulus pans surrounding the inner tanks
- approximately 2 kg of plutonium buried through 1975 in the burial grounds

The DES should either fully support the contention that the above wastes are retrievable or modify the statements on retrievability which appear in the summary.

9. Page V-12 Alternatives for Low-Level Waste

One alternative being considered by SRP for low-level waste is storage in concrete-lined trenches instead of the earthen trenches currently used. The DES does not state what type of trench cover is envisioned for this variation. If the cover material was permeable, use of concrete liners might create a situation in which overflow was possible.

A more detailed description of this alternative would facilitate an assessment of its potential benefits for low-level waste confinement.

Sincerely,

Voss A. Moore
Voss A. Moore, Assistant Director
for Environmental Projects
Division of Site Safety and
Environmental Analysis

U.S. ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20545

APR 25 1977

Mr. W. H. Pennington
Director, Office of NEPA Coordination
U.S. Energy Research and Development
Administration
Washington, D.C. 20545

Dear Mr. Pennington:

The Environmental Protection Agency has reviewed the draft environmental statement issued by the Energy Research and Development Administration entitled, "Waste Management Operations at Savannah River Plant (SRP), Aiken, South Carolina (ERDA-1537)." The stated purpose of the draft statement was to provide a detailed analysis of the actual and potential environmental effects associated with waste management operations at the Savannah River Plant.

We were pleased to note that both the history of Waste Management Operations and the Future Waste Management Program were very candidly presented in the appendices. EPA is encouraged to see this type of information and we welcome the opportunity to review the documents being prepared for the SRP, Hanford, and Idaho installations on alternative methods for long-term management of high-level radioactive wastes at these three sites. Such work will not only help to resolve the waste management problems at Federal facilities, but the information should be helpful in solving the commercial waste management problem as well.

In December 1973, EPA commented and provided suggestions with respect to Federal Register Notice 38 FR 2195. In particular, we indicated the subjects we believe necessary for inclusion in the environmental impact statement being prepared for the Hanford Facility. The comments which follow are supplemental to those above and are based on the assumption that production operations and radioactive releases at SRP will continue at about their present level for the foreseeable future.

As a part of the waste management plan at SRP, it is stated that the "waste management operations use only a small fraction of the plant site and that this fraction will require surveillance and control

2

for the foreseeable future; and further that decommissioning will be addressed as part of the longer range waste management program." Although EPA agrees that there should be a long-range plan for nuclear waste management and decommissioning of facilities, assessment of the impacts of decommissioning should be done at the same time the necessary funding is allocated.

The draft statement indicates that the "R" and "L" production reactors are in "stand-by" condition. If the production of weapons materials at SRP will in fact be maintained at the present level, it could be assumed that decommissioning of these units is a very real possibility. Thus, the final statement should give a more detailed plan for these stand-by units and if they are eventually to be decommissioned, this should be clearly stated and procedures and time-tables representing the decommissioning effort provided.

The various reviews of the SRP waste management plan indicate that bedrock storage remains a possible option for long-term waste storage at SRP. In commenting on the draft EIS for Bedrock Disposal in March 1972, EPA expressed its grave concerns regarding the potential environmental impact of this disposal option. If bedrock storage is still a viable option, then it should be more specifically addressed, with particular attention paid to the question of isolating shafts and tunnels from the Tuscaloosa aquifer, the principal water supply for most of southeastern Georgia. It is EPA's opinion, however, that further investigation is needed to define more precisely such factors as the geological and hydrological conditions that determine the usefulness of sites such as SRP for waste disposal and to better determine the effects of heat and radiation on the enclosed rock media.

Including the general comments and concerns stated above, EPA has the following specific comments:

1. Page III-32: "...individuals served by the water treatment plants consume 1200 ml of water each day." Doses are calculated based on this level of consumption. Since, however, the Drinking Water Standards are based on 2 liters/day consumed, the impact assessment should be readjusted to reflect this higher volume.

2. Page III-28: "...dose commitment means radiation dose equivalent that will be received in a lifetime (70 years) by population groups..." We believe this method does not reflect the total environmental impact. It is EPA's position that the potential total environmental impact in subsequent years is best estimated by calculating the "environmental dose commitment," the sum of all doses to individuals over the entire

time period that radionuclide persists in the environment in a state available for interaction with humans. The environmental dose commitment is usually expressed for a period of 100 years recognizing that it is difficult to estimate the population growth much beyond this time period.

3. Page I-12: "...long-term offsite effects of SRP releases to the surrounding population will be much smaller than the effects in the year of actual release..." This statement should be clarified since cancer has a long latency period.

4. Tables III-33 and III-34 appear to imply that the total whole body population doses from atmospheric releases from Vogtle Nuclear Plant (VNP), Barmwell Nuclear Fuel Plant (BNFP), and Savannah River Plant (SRP) should be additive since the plant sites are so near to one another. The inference drawn from these tables is that BNFP operations would have a significant effect on the whole body population dose from atmospheric releases as compared to the corresponding dose calculated for SRP in 1975. We would suggest that two scenarios be offered, one with SRP doses and another with combined doses from BNFP, VNP, and SRP. This would give a broader spectrum of possible off-site population doses.

In light of our review and in accordance with EPA procedure, we have rated the Savannah River waste management operations as LO (Lack of Objections) and classified the draft statement as Category 2 (insufficient information). If you or your staff have any questions concerning our classification or comments, please don't hesitate to call us.

Sincerely yours,

Rebecca W. Hammer

Rebecca W. Hammer
Director
Office of Federal Activities (A-104)